

THE IMPACT OF WINDOW OPENINGS IN DEFINING A BUILDING'S OPENESS OR CLOSENESS

INTRODUCTION

People spend a great time in indoor spaces, to make the indoor environment pleasant window openings are a necessity. They have always been implemented in buildings and play a functional role, for example they make air and sunlight passage possible, but can also be viewed as a form of ornamentation (Robilant, 2014). Depending on the measurements, style, and material they can transform the appearance of the building and its relationship with the public space. In fact, this appearance can make the building be perceived as open or closed towards the surrounding public space, which is an important place for material, social and sensorial exchange. The impact the building generates can make these exchanges increase or decrease (Faroldi, 2020).

In modern time, windows and window openings are perceived as standard and, often, do not hold aesthetic and functional qualities as historic ones used to do (Cremers, 2016). In fact, today's windows openings are frequently standardised. Although many of today's designs are standardised, it can be challenging for architects to achieve a unique project by giving more attention to window openings.

Architects, more often, make use of BIM programs which contain, for example, standard window families forgetting what Robilant stated saying that window openings can also be

a form of ornamentation and not just be functional elements in a building. Although people spend a great time inside, windows do have a strong relationship with the outdoor space. The relation has changed during the years with the introduction of new window opening types, for example display windows, these create a fluid relation with the between the inside and the public space outdoor (Orvell & Meikle, 2009).

Reasoning

This research aims to address the impact and its extension of window openings in defining a building's openness or closeness towards the public space in relation with the redesign of the Harbour Police building situated at Sint-Jobsweg in Rotterdam. Within this research, window openings must be intended as any open space in a wall where a window is to be placed.

The topic of the research has been chosen in relation to the relevance that windows have when creating a relation with the public space and in relation to the graduation studio *Revitalising 20th century Heritage*. Today, many buildings are vacant and many more will become so in the future. In this regard, the Dutch Police is facing a great change, in fact, in

the coming ten years a large number of square meters of real estate will be divested, buildings will be renovated or adapted for new functions. In the studio Revitalising 20th century Heritage the students will work together with the Atelier Politie Bouwe Meester to come up with redeveloping design proposals for one of ten locations around the Netherlands. Within the studio, I have chosen to follow the line of research *Touch & Feel*, which focusses on the materiality of the buildings and points on to revealing hidden values of material attributes and how these are perceived through senses (HA Lab, 2021).

Within the graduation studio, I have chosen to focus my attention and future design towards the Harbour Police building situated at Sint-Jobsweg in Rotterdam. This location consists of three buildings, each built in a different year (1933, 1940, 1994), and each in a different architectural style which is also represented in the windows openings. The 1930 and 1940 building were design by Bastiaan van der Lecq, the 1994 building was designed by Maarten Struijs. Because of these differences in characters, building ages, and styles, my attention was caught by the contrasting facades and window opening, and their different relationship with the public space. Also, windows and window openings have caught my attention during the CSI elective course I followed during the second semester of my first year of master. During this course I learned a great deal about window openings, glazing, frames, damages these can undergo and possible reparations. The intent of this research is to understand the relation of the Harbour Police building and their different styles towards the surrounding public space.

RESEARCH QUESTION & SUB-QUESTIONS

Today's architecture can lack originality, and windows often do not hold aesthetic qualities as they used to do in the past. Architects, tend to focus on the bigger picture, often forgetting about "smaller" elements, such as windows,

that can determine a building's character towards the public space. This is something I do not want to forget about in my future designs.

To address this topic a main research question and subsequential sub-questions, have been formulated as follows: *To what extent do window openings help define a building's openness or closeness towards the public space?*

- *How did the application of window openings change during the 1930's, 1940's, and 1990's?*
- *What typology and style of window openings was used for the original design of the Harbour Police building of 1933, 1934 and for the design of the addition happened in 1994?*
- *Specifically referring to the Rotterdam Harbour Police building, what role do window openings play in defining the buildings' openness or closeness?*
- *What building functions suite a resulting open or closed building towards the public space?*
- *What position can an architect take when being faced with the decision of interfering with the current openness or closeness of a building towards the public space, by having to fit a function that is not pertinent with the state of the facade?*

This research aims to address the impact and its extension of window openings in defining a building's openness or closeness towards the public space. Among this, the research aims to discover a set of guidelines that can help architects understand the impact window openings can have on the public space and consequently help them during their design process. Also, it aims to help them, when having decided whether they want a more open or closed relation to the public space, to choose specific windows openings which are the most suitable for their design and the appearance they want to achieve.

METHODOLOGY

In order to carry out this research I will undergo different research methodologies. In fact, the first step in the research will be to extract information about typologies and styles of window openings of the 1930's, 1940's, and 1990's from literature sources. This information will be critically used to assess the typology and style of the window openings present in the Harbour Police station. Information about the openness and closeness of a façade will also be gained from comparing literature sources, as well as literature about the impacts these can have on the public space.

Simultaneously, research on the police buildings and their windows openings will be conducted making use of original façade drawings and photos retrieved from the archival situated in Rotterdam. From this research I will retrieve information about the original materials, sizes, styles of window openings and how these might have changed during time in relation with the Touch & Feel line of research. It will be possible to value the window openings and their elements.

At this point, it will be clear, comparing the openings to the conducted literature research, whether the Harbour Police station facades are open or closed towards the public space. Once all this information has been acquired, it will be possible to critically outline to what extent the window openings of the Harbour Police station help define its openness or closeness towards the surrounding public space.

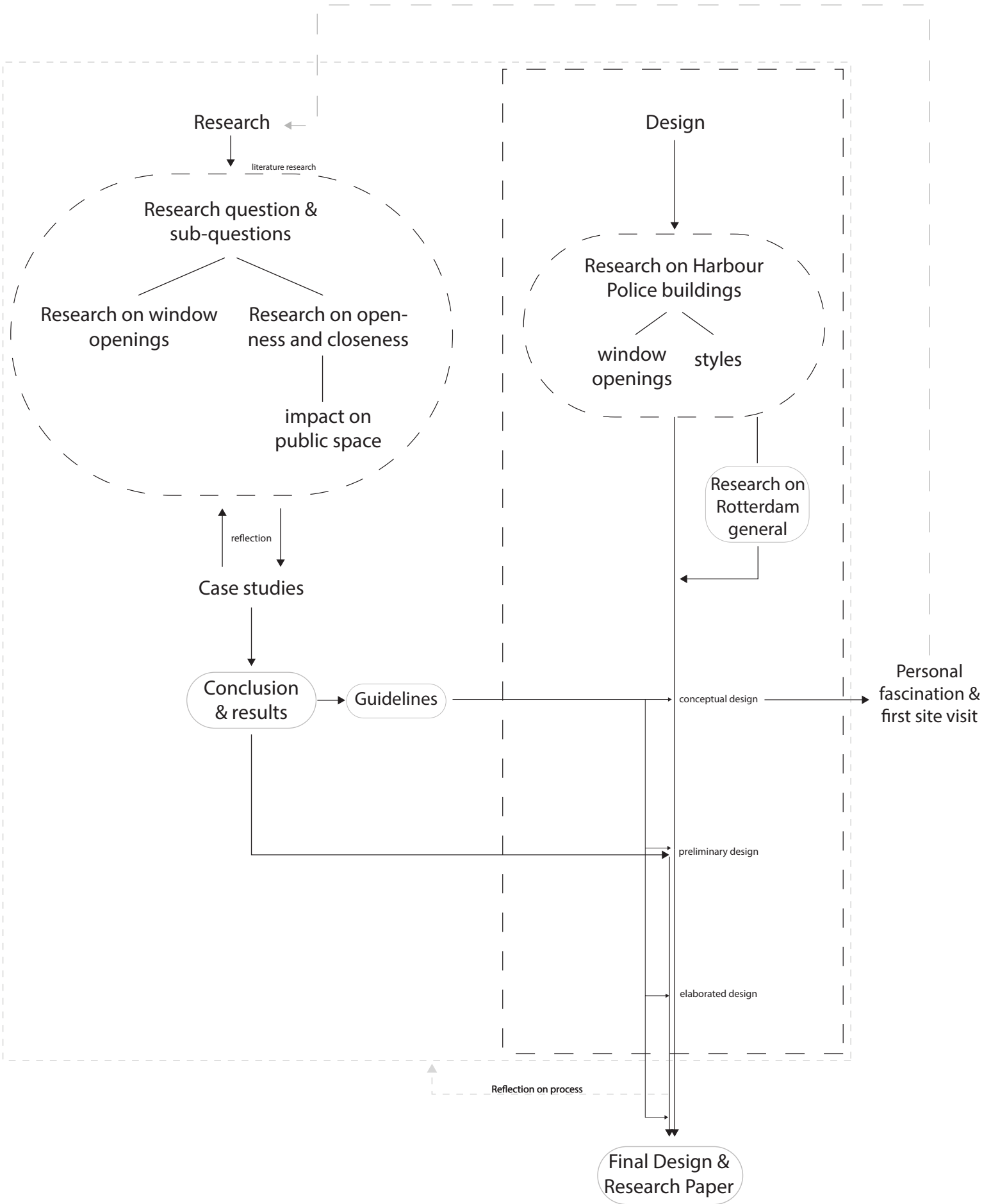
With the analysis a number of case studies and literature about buildings with different typologies and their use of window openings, it will be possible to determine which building functions suite buildings which are open or closed towards the public space. The case studies will be selected based on their function and the typology of window opening they have. At least one case study will have an open character towards the public space, and one will have a closed one.

This research ultimately aims to discover a set of guidelines, which will be applied in the redesign of the Harbour Police building. The guidelines will help me produce design proposals from which I will have to choose from. This decision will be the result of the information gained regarding the Harbour Police station, and the surrounding area. Moreover, the guidelines can have a broader use. In fact, these can help architects understand the impact window openings can have on the public space and consequently on their design and help them choosing particular windows openings in the design process when having decided whether they want a more open or closed building in relation to the public space. Finally, the obtained guidelines will help me define the function which I will implement in the design of the Harbour Police station. However, this decision will not only be based on the set of guidelines, in fact more factors, such as the future plan the municipality of Rotterdam has for the area, will play a role in determining the final design.

THEORETICAL FRAMEWORK

This research introduces several topics such as the application of window openings and typologies, and consequent architectural styles in the Netherlands in the 1930's, 1940's and 1990's, the openness and closeness of a building towards the public space. As a result of preliminary studies, the concept of openness and closeness towards public space has only been addressed in relation to the façade as whole and not in relation to the window openings. Therefore, I am planning on researching the relevant topics apart from each other and draw a conclusion from each of them. Once this will be done, a broader conclusion will be drawn in order to answer the research question.

The topic of windows and their history in the Netherlands is introduced in the report of WTA-International, *Historische vensters: typologie*,



duurzaamheid, antiek glas, ramen, kozijnen, in which the development of window typologies in the Netherlands is clearly explained.

The first sub-question is related to the architectural styles and application of window openings in different time periods throughout the 21st century. In his book *Dutch architecture after 1900*, Reinard Blijstra illustrates how architecture has changed in the first half of the 21st century and the styles which have used along with their characteristics. Costanzo and Hibelings, in their book *Dutch touch: sulla seconda modernità in Olanda*, elaborate on the societal and historical reasons of the change happened in the Dutch architectural style during the 1990's, and elaborate on architectural characteristics used in designs during these years.

The concepts of openness and closeness of a building are illustrated in the article *The Façade – A Reflection on the Change of the Public Sphere* written by Birgit Jürgehake. In this article the relation, which may be physical, spatial and visual, between the façade and its elements, and the public sphere are illustrated. In the article *Close encounters with buildings* by Jan Gehl, Lotte Johansen Kaefer and Solvejg Reigstad, the openness of the facade towards the public space is elaborated, this happens mostly on the ground level. Further analysis will have to be made in order to define how elements of the façade impact the public space and to what extent do window opening impact it.

closeness of a building towards the public space can help define a suitable function for a vacant building.

This research will be crucial for the end design, since it covers all the entire graduation and will guide me in decision making.

RELEVANCE

Currently, many buildings are being designed not taking into consideration the impact window openings can have on the openness or closeness of the building towards the public space. This, together with other aspects, can lead to anonymous buildings lacking character. Also, as of today, there is a large number of vacant buildings in a world where indoor space is more needed every day. Defining the impact window openings can have on the openness or

BIBLIOGRAPHY

Blijstra, R. (1966). *Dutch architecture after 1900*. P.N. van Kampen & Zoon.

Costanzo, M., & Hibelings, H. (2004). *Dutch touch: sulla seconda modernità in olanda* (Ser. Percorsi = paths, 03). Kappa.

Cremers, J., 2016. *Building Openings Construction Manual: Windows, Vents, Exterior Doors (Detail Manual)*. Munich: Detail Business Information GmbH, The.

Faroldi, E. (2020). *Public space and the contemporary city. A narrative of places, time, relationships*. TECHNE 19 (2020): The public space. DOI: <https://doi.org/10.13128/techne-8852> Published May 5, 2020

Gehl, J., Kaefer, J., Reigstad, S. (2006). *Close encounters with buildings*. URBAN DESIGN International (2006) 11, 29–47

HA Lab (2021). *Heritage & Architecture – Studio: Vacant Heritage | Politie | Bouwmeester*. Retrieved October 28, 2021, from <https://brightspace.tudelft.nl/d2l/le/content/398787/viewContent/2477667/View>

Hopkins, O. (2012). *Reading architecture: a visual lexicon*. Laurence King. Retrieved October 4, 2021, from <https://www.scribd.com/document/480878420/Reading-Architecture-A-Visual-Lexicon-PDFDrive-com>

Jürgehake, B. (2014). *The Façade – A Reflection on the Change of the Public Sphere. On the example of the mass housing in the Dutch cities of the 20th century*. Cloud-Cuckoo-Land, International Journal of Architectural Theory. Vol. 19, Issue 32, 2014. cloud-cuckoo.net/fileadmin/hefte_de/heft_32/article_juergenake.pdf [1.10.2014]. p. 227–249.

Knaack, U., Klein, T., Bilow, M., Auer, T. (2014). *Facades. Principles of Construction*. 2. rev. ed. Basel: Birkhäuser

Langmead, D. (1986). *English language sources on dutch modern architecture, 1900-1940 : journal articles not by dutch authors* (Ser. Architecture series--bibliography, a 1672). Vance Bibliographies.

Orvell, M., & Meikle, J. L. (2009). Public space and the ideology of place in american culture (Ser. Architecture, technology, culture, 3). Rodopi. Retrieved October 28, 2021, from <https://tudelft.on.worldcat.org/v2/search/detail/644525117?queryString=public%20space%20architecture&clusterResults=true&groupVariantRecords=false>

Robilant, M. di, Maak, N., Koolhaas, R., Boom, I., & AMO Harvard Graduate School of Design. (2014). *Window* (Ser. Elements). Marsilio.

Prina, F. (2008). *Architecture : elements, materials, form* (Ser. Princeton field guides to art). Princeton University Press.

Prudon, T. H. M. 2008. *Preservation of Modern Architecture*, Hoboken, N.J.: John Wiley & Sons. White, M. (2003). *De Stijl and Dutch Modernism*. Manchester University Press. Manchester, UK.

Window opening. (n.d.) *Illustrated Dictionary of Architecture*. (2012, 2002, 1998). Retrieved October 4, 2021 from <https://encyclopedia2.thefreedictionary.com/Window+opening>

WTA-International (2012). *Historische vensters: typologie, duurzaamheid, antiek glas, ramen, kozijnen*. Retrived October 21, 2021, from https://www.wta-international.org/fileadmin/user_upload/Nederland-Vlaanderen/syllabi/2012-03-23_Historische_vensters.pdf